

PATENT SPECIFICATION

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(54) TOOL FOR CUTTING DRAINAGE TRENCHES

5 (71) We, MACHINEFABRIEK D. BARTH & ZN. B.V., of Mijlweg 23, S-Gravendeel, Holland, a Dutch Body Corporate, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to a draining element or cutting tool which can be connected to a crawler or other tractor vehicle for digging a trench in the bottom of which drainage pipes are positioned. A
 15 known tool has a bottom plate and two side plates positioned perpendicularly thereto and spaced from each other, which side plates extend in the direction of movement of said tractor vehicle and have leading edges which extend in a concave curve rearwards and upwards and are covered by a
 20 front plate. Such a tool acts as a scoop, and has the disadvantage that the material (earth) being loosened by said tool comes to lie above the original ground level and stays there, by which undesired accumulations are left behind.

25 Also a tool is known, of which the leading side has a cutting rib which is a triangle in cross-section, the apex angle of the triangle being constant. By this the material is pushed aside over the whole length of said rib, and the walls of the trench formed in this way are so compressed that said walls are made impervious to water and drainage
 30 into the trench is impeded or prevented.

35 The present invention resides in a cutting tool for cutting a drainage trench in soil or the like, which tool comprises an elongated bottom plate, two spaced side plates substantially perpendicular to and attached to the bottom plate, the side plates having leading edges extending rearwardly and upwardly in a concave arc and a front closure member attached to, and closing the spacing between, the said leading edges and provided with a forward cutting edge

defined by surfaces the included angle between which, in cross section, increases from the rear, upper end to the forward, lower end of the said cutting edge.

An embodiment of the invention is shown in the accompanying drawing, in which:

Figure 1 is a side view of a tool for cutting drainage trenches; and

Figures 2, 3, 4 and 5 are cross-sections on the lines II—II, III—III, IV—IV and V—V respectively in Figure 1.

The illustrated tool 1 consists of a bottom plate 2, two parallel vertical side plates 3 positioned perpendicular thereto and spaced from each other, a rear plate 4 which connects the vertical trailing edges, and a front plate 5 which connects and closes the gap between the leading edges of the side plates 2. The upper edges of the front plate 5, the side plates 2 and the back plate 4 are covered by an upper plate 6.

The leading edges of the side plates 3, and hence the front plate 5, extend in a concave curve upwards and rearwards from a sharp tip 12 at the extreme forward and lower end of the tool.

In use, the tool is secured e.g. by a parallelogram linkage to a tractor, in general a crawler vehicle, and on movement of the tractor is forced through the earth in the direction of the arrow A.

Over a certain part of the length of said front plate 5 a cutting rib 7 is provided, which rib is a triangle in cross-section, the base 8 of the triangle, adjoining the front plate 5, having the same width as said front plate 5. The other two sides 9, which form a cutting edge, enclose an angle which increases gradually from the upper end 10 to the lower end 11 of the rib. Depending on the need, said rib 7 can be displaced along and fixed to the front plate. At the lower end 11 the sides 9 of rib 7 are almost in line and merge into the flat front plate 5.

During the operation of said tool the earth is cut loose and broken open by point

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12. At the leading lower end 11 of rib 7 the earth is not only broken open but also pushed aside, the lateral displacement gradually increasing as the apex angle of the rib decreases along the rib. By this combined breaking open and pushing aside of the earth, vertical trench walls are produced which are still sufficiently pervious to water, but the broken earth is not pushed upwards above ground level. Drainage pipes are then laid in the trenches thus formed.

WHAT WE CLAIM IS:—

1. A cutting tool for cutting a drainage trench in soil or the like, which tool comprises an elongated bottom plate, two spaced side plates substantially perpendicular to and attached to the bottom plate, the side plates having leading edges extending rearwardly and upwardly in a concave arc, and a front closure member attached to, and closing the spacing between, the said leading edges and provided with a forward cutting edge defined by surfaces the included angle between which, in cross section, increases from the rear, upper end to the forward, lower end of the said cutting edge.

2. A cutting tool as claimed in claim 1 in which the front closure member comprises a front plate, the said cutting edge being formed by a rib of triangular cross section mounted on the front plate and having substantially the same width, at the base of the triangle adjoining the front plate, as the front plate.

3. A cutting edge as claimed in claim 2 in

which the rib is adjustable longitudinally relative to the front plate.

4. A cutting edge as claimed in claim 2 or 3 in which the cross section of the rib is an isosceles triangle.

5. A cutting tool as claimed in any preceding claim in which the cutting edge terminates short of the upper and/or lower ends of the leading edges.

6. A drainage trench cutting tool connected to a crawler vehicle by means of a parallelogram system and destined for digging a trench in the bottom of which draining tubes are positioned, consisting of a bottom plate, two sides plates positioned perpendicularly hereto and spaced from each other, which extend according to the direction of movement of said crawler vehicle and of which the trailing edges extend vertically and are connected by a plate secured thereto and the leading edges extend in a concave curve rearwardly and upwardly and are covered by a front plate, a severing rib of triangular cross-section being mounted on the front plate, of which rib the base is as wide as said front plate and of which the apex angle enclosed by said severing rib increases from the upper end to the lower end of said severing rib.

7. A cutting tool substantially as herein described with reference to the accompanying drawings.

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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of
the Original on a reduced scale*

